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*I am much obliged
to Mr. Rigden
kind regards
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THE LAWS OF HEALTH:

A LECTURE

DELIVERED IN THE NATIONAL SCHOOLS, BROMPTON ROAD,
ON JANUARY 29TH, 1878.

BY

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THE LAWS OF HEALTH.

No apology on my part is required for introducing such a subject as the Laws of Health to your notice this evening, for it concerns in the highest way possible every one either as an individual or as a member of a vast community, nevertheless I trust your patience will not be greatly taxed while I am endeavouring to show you how disease can be avoided, and, consequently, how life may be prolonged.

I will start with the assertion—which may perhaps be a little startling to many of you, but which is none the less true—that nearly every disease from which we suffer is more or less under our control; there are not many diseases for which we have a remedy which will act as what we call a “specific,” that is, we have but few drugs which will of themselves, without any aid, directly cure a disease. Doubtless, most of you know of one or two diseases which are at once cured by the administration of certain drugs, for instance, quinine for ague, and lime juice for scurvy, which used to be such a fatal scourge to our navy, and which very lately was the main cause of failure of an Arctic expedition. These two diseases, though curable by these drugs, have been diminished in frequency, not by their means, but by more general preventive measures; improved drainage has almost stamped out ague, and a better system of dieting has had a similar effect on scurvy. What we do know, however, and what successive Governments have not half acted up to, is the fact that we have means at our disposal for preventing nearly every disease which flesh is heir to. This is very startling, but if you will think a minute you will see how true it is, and that it is especially true of those diseases, which, when they are actually present, are the least under our control.

Take hydrophobia, which was alarmingly on the increase last year. We know, in this country, that it most frequently arises from the bite of a dog, more rarely from the bite of a cat; that the dog or cat must be rabid; and that the dogs which most frequently transmit it to us are mongrel curs, and dogs without owners, who subsist anyhow—not dogs which are well kept, and of good breed. Hence, if the law were properly carried out against stray dogs, and the dog-tax more carefully levied, or even increased, there would be a very sensible diminution in the amount of hydrophobia, and a wholesome diminution in the

number of the dogs in the streets. This has already been accomplished, to a marked extent, by the more stringent application of the police regulations.

Take typhoid fever, again, the disease which has so grievously affected our Royal Family in three generations. We can do nothing to shorten the duration of this disease by treatment. We can carefully tend a patient through it, prevent complications from arising, and, when they may arise, we may mitigate their severity; but there is no drug or combination of drugs, of which we know at present, which will shorten the attack, but we do know the cause of it to arise from bad drains, from letting sewer gas get into our houses, and that it arises by contagion from the excreta of a patient who has the disease.

The causes of death may be classified under four main heads:—

- I. Zymotic diseases.
- II. Constitutional diseases.
- III. Local diseases.
- IV. Accidental diseases.

There are a few diseases which we call Developmental—"harelip" many of you know—but for our present inquiry we may be satisfied with the four classes above named.

The diseases of the first class, Zymotic (from ζυμή, *leaven*), are due to some form of ferment. They are characterised by being more or less infectious or contagious, that is, they spread by communication from person to person; they are also more or less subject to epidemic influence; there are years when they are very prevalent, and again there are years when we have only isolated cases here and there. The principal diseases in this class are all known to you, and are all more or less dreaded. The class includes small-pox, scarlet fever, typhus and typhoid fever, and cholera. Now, as we have a special preventive against small-pox over and above the means of prevention which we have against the others, and as this special preventive is ordered by law, I trust you will not think I am taking up your time needlessly if I enter into it rather fully.

Small-pox, I may say in starting, differs also from the other diseases of this class, in that it is very easily inoculable, that is to say, that a little matter taken from a small-pox pustule and inserted under the skin of another person, will give that person the disease, and this inoculated disease is very frequently of a milder type than the original, though equally capable of transmitting a severe form of disease to others.

No one of you, I dare say, has the least idea what small-pox was in the last century, but if you will read you will find the fearful mortality it occasioned, equal to one-twelfth of the entire deaths of the whole community*; and in one town (Manchester) during the six years 1769-1774, the mortality from small-pox was as great as 1 in $6\frac{1}{2}$ of the whole number of deaths; it also caused about one-half the deaths of children under ten years of age. You will read of the disfigurements and blindness caused by it, to such an extent that almost all the population were marked with small-pox, while more than half the total number of cases of blindness were caused by it. Indeed, so fearfully prevalent and dangerous was it, and it was looked upon so much as inevitable, that in the beginning of the second quarter of the last century the practice was getting common for persons who had not had it to be inoculated with the disease; by so doing they were able to choose the time of the year, the place, and the age at which it was most suitable to have the disease; and so, in most cases, they had milder attacks. In 1746 the Small-pox and Inoculation Hospital, London, was founded, that the poor might participate in the benefits of inoculation, which had hitherto been confined in a great measure to the rich. In 1798 Edward Jenner published his greatest discovery of all ages in preventive medicine, "Vaccination," and as this got more known, inoculation, which was occasionally fatal, and when not fatal decidedly helped in spreading the disease, fell into disuse. It was discontinued at the hospital in 1822, and rendered unlawful in England by Act of Parliament in 1840: the penalty for infringing the law being a month's imprisonment.

In the early part of this century, a friend of mine tells me that so many old people were marked with small-pox, that they were called "cribbage-faced"; and people who were suffering from the disease were said to have been rolled in a pea-barge, for such was their appearance; these terms are doubtless rarely heard now.

Before I go any further, let me again remind you of the fearful scourge this disease was before the discovery of vaccination, and compare that with what it is now, when we but rarely see a person marked with small pox, and when there are not many persons who can say that they personally have known of anyone who has died of it. Remember, also, that it was a disease so prevalent and so fatal that it was the practice to choose favourable opportunities for giving it to

* Average decennial mortality from small-pox from 1719-1758 was 20,652, and from all causes 253,082.—"Thomas's Practice of Physic." 11th Edit., Vol. I., page 163.

people that they might have it mildly, and that this plan was found to greatly increase its prevalence, if it did not as well increase its fatality.

I have not time, nor would this be the place, for me to enter upon the subject of the discovery of vaccination, but let me point out to you a few statistics as to the prevalence of small-pox since the introduction of vaccination. It has been estimated that 3000 persons out of every million of the population in England and Wales died annually from small-pox previous to the introduction of vaccination; for the three years 1838-40, when vaccination had to a great extent become diffused, but before any public provision was made for its gratuitous performance, 770 per million died annually. The annual average death rate of nine years after that fell to 304 per million. Now, in 1853 the first Compulsory Vaccination Act was passed, and during the fifteen years previous the deaths from small-pox averaged 442 per million, and in the twenty-four years since that time they have averaged 222 per million—just half that which prevailed before the first Compulsory Vaccination Act, and this includes the serious epidemic of 1871-72.

Now let us see what that epidemic teaches us; it teaches us nothing but what we knew well before, but it confirms all previous knowledge. The mortality per cent. of the unvaccinated was 47·5. Of those with

One or more bad or indifferent marks	. 25 per cent.
With one good mark	5·3 „
With two good marks	4·1 „
With three good marks	2·3 „
With four good marks	1·1 „

These are statistics from the cases treated in the Homerton and Stockwell Hospitals, and what can possibly be plainer.

Now, you will naturally ask, what was the cause of this great epidemic? I answer at once, and most confidently, insufficient vaccination; and almost entire neglect of re-vaccination. If you look at the Government returns you will find that about 5 per cent. of the population escape vaccination altogether, and as we had been going for many years without a severe epidemic of small-pox, these unvaccinated persons had accumulated to a large number, and hence when the epidemic of 1871 did come, it found a large number of people entirely unprotected. Then, again, as regards the number of vaccination marks, it is incontestably proved that the more and the better the marks, the greater the protection; but every doctor knows the trouble he has over vaccination, not so much to do it at all, but to do it

efficiently ; parents have it performed now because it is ordered by law, but the more inefficiently it is performed the better pleased they are. I will give you one further illustration of the value of vaccination. There was small-pox in a family at Bushey, consisting of nine members, of whom three were vaccinated and six had not been vaccinated ; all six who had not been vaccinated took the disease and four died ; the other three escaped entirely, one an infant at the breast, fed by its mother within two hours of her death.* I take it that as serious a responsibility rests on that parent who refuses to give his child proper protection against small-pox, as if he had brought the child up unable to read or write. What is the value of a young woman who is marked with small-pox ? Will she get a good situation as domestic servant ? No. Is she likely to get a husband ? No. Would she be taken on at any shop or restaurant ? No. She must go out charring or washing, or go to some factory ! Very much the same can be said of a man. Who would have a man marked with small-pox as a coachman, a footman, or a butler ? And all this disfigurement is due to the neglect of the parents, not of the doctors, who have through much obloquy been doing their best to prevent it. Not only is vaccination necessary, but re-vaccination should always be performed at or about puberty, and if this had been thoroughly performed up to the last epidemic, the epidemic, I feel positive in asserting, could not have existed. Out of the 15,000 cases treated in the metropolitan hospitals only four presented evidences of having been re-vaccinated ; again, at the Highgate Small-pox Hospital, Mr. Marson tells us that in 30 years no nurse or servant at the hospital has taken the disease, he having taken care always to re-vaccinate them on their coming to live in the hospital ; and, further, that when a large number of work people were employed for several months about the hospital, most of whom consented to be re-vaccinated, two only were attacked by small-pox, and they were among the few who were not re-vaccinated. The two chief causes which make people object to vaccination, I take it, are these :—

I. They have not the least idea what small-pox was, and would be again, without vaccination.

II. The dread of giving other diseases with vaccination.

Now I must say a few words about this. Sir William Jenner, who has had a very large experience among children, says he has never seen any disease whatever which has been produced by vaccination ; I will not deny the possibility through careless vaccination, either

* “ British Medical Journal.” 1877. Vol. I., page 459.

from a dirty lancet, or from blood being inoculated with the lymph, that other diseases may be given ; but that is not vaccination alone, it is vaccination plus something else, and I think that the Government should thoroughly investigate any alleged death from vaccination. Again, I cannot see why sometimes erysipelas, or some slight skin eruption, should not come on after vaccination, as it will sometimes after any other little cut ; the only wonder is that it does so so very rarely.

Supposing that vaccination is not quite harmless, I do not see that that is the least argument against its employment in the face of the figures I have quoted. I think the Government should absolutely compel vaccination, and re-vaccination ; and I feel sure that, if that were done, small-pox would soon be quite stamped out. In the meantime we must rely on individuals, and they must think not only of themselves, but must remember that their getting small-pox may be the cause of the death of many others, quite as much as if they had shot them. We must also remember that of all diseases small-pox is the most infectious : it will even spread across a street, so that it is absolutely necessary that a case should be isolated as early as possible after it has been detected.

Scarlet Fever causes more deaths than any other disease with the exception of bronchitis and consumption ; over 16,000 deaths occurred from it in 1876 in England, and in some years over 30,000 deaths have been recorded. This disease is so infectious—and we know of no preventive against it as in the case of small-pox—that all our endeavours should be to stamp it out by instant removal of the person affected to a special building, and the immediate disinfection of all the clothes, people, and furniture which have come in proximity to the disease. I know that here I am treading on very delicate ground ; there is nothing I admire more among the poor than the tenacity with which they cling to their children or parents when they are ill ; the noble devotion which a mother and a father display towards their sick child has struck me over and over again, and I have never liked counselling them to let their child go to a hospital ; but they must remember, and everybody must remember, that by keeping the child in the cottage or house, they are running the risk of other of their children catching the disease, and possibly dying of it ; and not only their own children, but other people and other people's children, and these people spread it again further. Many a fearful epidemic has been traced to a single case, and a parent who has a single case should contemplate the

awful responsibility of setting up an epidemic, of which he cannot tell the end.

These remarks I do not wish to apply only to the so-called poor ; I think it should be a recognised practice that every case of scarlet fever should be removed to a special building ; much heart-burning would thus be avoided, such as having one's family isolated for months, or one's bosom friend passing one on the opposite side of the road for fear of infection. Until some such measures are taken we must expect something like 20,000 people to die annually from scarlet fever. When this mortality occurs in war we are justly horrified, but occurring as it does year by year from a preventible disease we think nothing of it, except that wretched fatalism which says that everybody must have it, and a more false doctrine never hindered the progress of science.

Scarlet fever, perhaps more than any other disease, may be spread through a laundry ; it is astonishing how long we have gone on in careless indifference as to how and where our clothes are washed. Many poor people take in washing who have only one room to do it in, where they eat and sleep as well ; washing should be done in a large, well-regulated establishment, under the supervision of a sanitary officer.

Milk, also, has been the means of conveyance of scarlet fever poison to households.

I have yet to add, that for all the deaths from scarlet fever, we may calculate that fully half the number are more or less injured for many years, and perhaps permanently.

We next come to **Typhus** and **Typhoid Fever**, and, classing these two diseases together, I am glad to say that there has been a very great decrease in the mortality from them since 1848 ; from that time to the present they have more than halved ; at the present time, too, you Londoners will be glad to know that this immense city is healthier in point of fever than any of the 17 largest towns in England. It is only since 1869 that they have been separated by the Registrar General, and in the 8 years since then the cases of typhus have diminished about 70 per cent., but the cases of typhoid have remained about the same.

The causes of these two fevers differ considerably : **Typhus** is due to overcrowding plus a low state of health of the community, due to privation, want of food, &c., hence we find it after times of famine and general distress, for instance, in Ireland after the failure of the

potatoe crop, also in wars, where there is too frequently a lamentable state of overcrowding, with deficient food. This disease is frequent in towns, according to the density of the population ; it is exceedingly frequent in Liverpool, which is the most densely populated town in England, more than double the density of London. This disease occurs in London far too frequently ; over 1,400 died from it in 1875 ; so it must be our endeavour to clear out those densest parts of London, widen streets, make squares and gardens, distribute the population over a larger area, prevent individual houses or floors being dwelt in by more than a certain number. This disease, like other diseases I have mentioned, spreads by infection, so it is our duty to isolate a case directly ; but when a case arises we are also to see in what way it is due to overcrowding, and to remedy the evil. Some of you may perhaps remember a severe outbreak of typhus confined to a small area in Chelsea,* some few months ago, which was much overcrowded, and in a very filthy, neglected condition. It should not be necessary for an outbreak of typhus to occur before these fever nests can be removed.

Typhoid Fever is distinctly traced to sewage poison, and this may occur in many ways. Suppose a man's house be situated on a hill, and his cesspool be above the foundation of the house, and his well below it, it is obvious that the contents of the cesspool will soak into his well from which he takes his drinking water ; this state of affairs happens now-a-days not unfrequently in country houses, and is the obvious cause of typhoid fever ; but in towns typhoid fever is just as common, and here it occurs from sewer gases getting into our houses from the common drains, and it is not enough to rely upon traps, however good, but our drains must be well ventilated in some way or other, so that all sewer gases are carried well away.

This ventilation of our drains has not been carried out at all generally yet ; to diminish typhoid we must have a thoroughly good system of drainage, not only must the main drainage works be efficient, but every householder must see that his own drains are in good order.

By our present system of drainage in London we empty our sewage into the Thames at Crossness, some miles down, but according to a recent report of Captain Calver, he has found unquestioned evidence that foul and offensive accretions have recently been formed within the channel of the river ; he has found large deposits between London

* Wickham Place.

and Battersea Bridges, one especially exactly in front of St. Thomas' Hospital ; careful analyses of these deposits show that their constituents are precisely identical with the constituents of metropolitan sewage.

From this it seems that at least some of our sewage returns to us by the river, and I think it must be allowed that it is wrong to get rid of sewage by passing it into a running stream, or even into the sea. The natural place for sewage to go is on the land, and I do not think we should rest satisfied till we have found some means of utilizing our sewage in such a way that it may be useful to our land, and at the same time profitable to the farmer. I am quite aware that up to the present time sewage farming has not been profitable, but it labours under many disadvantages. Among them may be noted the unwillingness of landowners to let their land for such purposes except at unreasonably high prices ; were sewage farms very much increased in size or in number, I think they should become profitable ; but granting that sewage farming will not pay, I still hold that sewage should be applied to land, even if the sanitary authorities had to pay the farmer for disposing of it. We certainly should not continue pouring it into our rivers, spoiling them as wholesome streams, making them so that fish will not live in them, and contaminating them for those towns or villages which may be situated further down the stream.

Typhoid fever is often conveyed through the food we take, principally through the water we drink ; many epidemics have lately been traced to milk, through sewage contaminated water being used to wash out the cans, if not being added to the milk. This has been productive of good, in having led to the inspection of our Dairy Farms, and, consequently, we have been having better milk.

Of Cholera I will not say much ; it occurs in epidemics. The last epidemic in England was in 1866. It is very fatal, and spreads rapidly. It is proved that good drained towns suffer less severely than those badly drained. It is clearly our duty to do all we can to stop the early cases spreading, by quickly taking cognisance of them, and isolating the patients, disinfecting all the discharges before they enter the sewers, also disinfecting the bedding and clothing of the patient. These measures can only be thoroughly carried out by an efficient local sanitary authority, aided as well by an intelligent and helpful public.

I now pass to the second class of diseases, the **Constitutional**, including consumption, scrofula, rickets, and cancer. Putting cancer

aside for the present, we will discuss the other diseases. These diseases are essentially hereditary, that is, are transmitted from father to son ; they may be developed in the children from ill-health and want in the parents, especially the mother ; they may also, too, be developed in the child from bad feeding, bad air, &c. Now legislation can do a great deal to check this ; certainly persons with a marked tendency to consumption in their family should not marry, in fact the health of the community would be very much improved if people about to marry were compelled by law to produce a certificate showing that they could get their lives insured at the ordinary rates. This would doubtless cause hardship in some cases, but the advantages to the community would far outweigh the individual disadvantages. Consumption, you will be glad to hear, has been gradually decreasing in England since 1850, owing to the decrease of water in the subsoil by improved drainage. This was first drawn attention to by Dr. Buchanan in the reports of the Medical Officer of the Privy Council for 1867. In Salisbury it has been reduced nearly one-half, and in many other towns to a lesser degree. My father, Mr. George Rigden, of Canterbury, writes to me that in the parish of Northgate in that city, a deep drain was laid before it was laid in the other parishes ; two years after the laying of the drain, he found that although the number of births had increased from an increased population, and consequently there were more persons living, the number of deaths had not increased over those in the two years preceding the laying of the drain ; in all the other parishes the deaths had increased in proportion to the births ; a good deal of this reduction was in consumption and rheumatic cases. Consumption is also bred by over-crowding in workshops, schools, &c. also by want of fresh air and light ; for instance, we find that the principal disease which destroys the draper is pulmonary consumption, and the explanation is simple—he lives in a close place, with the doors of his shop closed, and in a dusty and close atmosphere ; the grocer, on the contrary, has a far lower death rate, he lives in a shop the door of which is always open, and he is very active himself.*

Cancer, I regret to state, we can do little to guard against, except to insure a good bill of health for those intending to marry ; it is unfortunately a fact that cancer mortality is increasing ; this we find also the case with some other diseases, that whereas, by our means, the ravages of some diseases are being reduced, other diseases are

* Taking the deaths of the community at large at 100, there would be 108 drapers die to 76 grocers.—*Sanitary Record*.

increasing, but we must not let this diminish our endeavours at reducing those diseases which we can, for the increase of life thus gained far out-balances the increased mortality from cancer and some other diseases.

I will now pass on to the third division of the causes of death, viz., **Local Diseases** ; that is, diseases of one special organ, or set of organs ; for instance, diseases of the nervous system, diseases of the circulatory system, of the heart and blood vessels, diseases of the respiratory system, and diseases of the digestive system ; these are the four principal divisions of local diseases, but of course there are many others. Taking all local diseases together, the mortality from them has increased in 25 years nearly to the extent of 3,000 per million living. Some of this increase is doubtless due to the diminution in the first class of diseases, for there are a proportionately larger number of people living at the age (over 45 or 50 years) when these local diseases cause more deaths. Many of them, too, are due to the present high pressure of living, and are preventible.

If we look through the individual diseases of the *nervous system* we find that there is an increase in all of them, with the single exception of convulsions ; and this heading refers in nearly all cases to infants, in whom convulsions are a symptom of any disease, not necessarily or frequently of the nervous system.

Insanity is included in this division, and that is probably on the increase ; I say probably, because it is very difficult to know for certain about it. I am dealing now especially with mortality, and insanity does not very often cause death of itself ; but the insane may die of any disease, and the fact of their insanity is not always stated. But as regards insanity, it is as well to treat it irrespective of its being a cause of death ; it is very frequently stated that it is alarmingly on the increase. I think there can be but little doubt that it is on the increase, but we must not forget that numbers are now-a-days cured at least for a time by being attended to early, and then relapse into that state again, and so get counted twice. Again, owing to the improved management in asylums, and the more kindly treatment of the insane, many get into asylums who in former days would have been kept at home, unknown, and not counted at all.

Insanity, too, is very hereditary ; but intemperance in drink is by far the most potent of all removable causes of mental diseases. This is the opinion of Dr. Bucknill, a great authority, and I think there can be no doubt of the truth of it.

Diseases of the organs of *circulation* are also to a great extent under

our control ; one of the great causes of heart disease is rheumatic fever, and with good drainage of the sub-soil we may, I think, curtail the number of rheumatic cases. Another great cause is physical strain, especially under adverse circumstances, such as our soldiers used to undergo with their accoutrements ; in them there was a great preponderance of that disease called aneurism, over that which is met with in the civic population. Aneurism is a bulging out of an artery owing to disease or giving way of its coats ; it is also found in those labourers who have to lift any heavy weights, causing much physical strain. This is doubtless being lessened by the increase of machinery, and by that and other means can be still further diminished. I must not pass over athletic sports as a cause of heart disease, especially when carried to extremes. You may doubtless remember having read of the University Oars, that their after-lives have been very good from a physical point of view ; but you must remember that theirs are picked lives, and because they have come to no harm, it does not follow that harm does not arise from over-indulgence in these sports. I feel sure that harm does arise in not a small number of cases. I think that more care is required as to those who should embark in athletic sports at all, and also into what sports, and to what an extent they should push them. I am not at all against the physical training of our people ; I think they would be healthier if they were so trained ; but I strongly protest against its being pushed to excess, and against such exhibitions of endurance as have been too frequent lately. Another mode in which these diseases may be induced is the excessive hurry-scurry of life. People now live away from their work ; they bolt their breakfast, rush off to catch a train—frequently the Underground, which has been facetiously called by a physician “ the invention of the Evil One ”—are jolted and shaken in it for half-an-hour or more, have to mount a number of steps perhaps to get to their work, and this hurry is repeated in the evening ; and while at business there is no time for anything more than a very small lunch, which is often taken standing ; and happy is the man who does not often in the course of his business take frequent glasses of wine. By this intense excitement people are surely shortening their lives, and bringing on diseases which will cause much misery in their failing years.

Of diseases of the organs of *respiration* we have bronchitis, inflammation of the air tubes of the lungs, causing more deaths than any one disease ; it is especially fatal in the very young and the aged ; over 23,000 died from it in England under 5 years of age. A great deal of this might be prevented by mothers and nurses having more

knowledge of the advantages of pure air without draughts. Bronchitis is also influenced materially by the drainage of the sub-soil, as in consumption ; it is also largely increased by fogs and smoke. Everyone knows that when we in London have two or three days of fog we are sure to see a long obituary in the papers, the deaths being principally among the old and very young, and mostly from bronchitis ; and we must know that for every death which occurs there are a great many cases of sickness. Now there is no doubt that a great deal of this smoke and fog of London is preventible if Londoners were only forced to consume their own smoke, as is required in many factories ; we might have a sky as blue as that of which the Parisians boast ; there would be also great saving of our public buildings and works of art.

Much may be done in preventing bronchitis and other diseases of the respiratory apparatus by attention to certain rules. It is good to accustom yourselves, and your children too, to go out in all weathers ; there are very few days in the year when even infants cannot be sent out for half-an-hour. Nurses should be instructed not to take children in the face of the wind when it can possibly be avoided, certainly not in an east wind. Great care should be taken not to let cold air suddenly into the lungs when going from a warm house or room into a colder air ; many colds are caught by people leaving heated rooms and going into the chilly evening air, which might be easily avoided by simply taking the precaution to keep the mouth shut for a short time, breathing in air through the nose ; respirators may be used with advantage under these circumstances, or a comforter may be tied over the mouth.

Clothing, too, is an important consideration in reference to these and many other diseases. It is a fallacy, which I hope nobody believes in now, that it is strengthening to clothe infants and young children lightly ; I am sure that young people especially want warm clothing ; every one should wear flannel next to the skin, summer and winter, of varied thickness, according to the time of the year or the habit of the individual. I might discourse all the evening on the precautions to be taken against catching cold. Do not consider the taking of these precautions as coddling ; it is not coddling to do your best to prevent diseases which may affect you, and not only you, but those who may be dependent on you ; it is nothing but sheer recklessness to come home in wet boots and not to change them, or to stand about in the wet, in wet clothes, when you may not be absolutely obliged. Diseases of the lungs are also the main causes of death in measles and whooping cough, diseases especially fatal among young children, much

of which might be prevented by the inculcation of some sanitary knowledge among parents and others who have to attend to these little sufferers.

Diseases of the *digestive system* cause a large number of deaths, of which a great many are among children under five years of age, and in these due to improper feeding; and I think if many of the causes of death were traced back, they would be found to be due to the same cause—I refer especially to diarrhœa and convulsions. It can never be too strongly impressed on mothers the necessity of suckling their children, and the necessity of giving them nothing but milk should they be unable to suckle from any cause. It should also be laid down as a rule never to be departed from, not to give infants corn flour, arrowroot, or other starchy kinds of food. In Scotland the death rate among infants is much lower than in England, and this is in a great measure due to the better feeding in the former country.* In Scotland oatmeal enters largely into the dietary of children after they have been weaned, and I think the English would do well to imitate the Scotch in this way. Oatmeal and milk should make the morning and evening meal for all the children of the poor; it is very cheap, and fully as nutritious as meat; Indian corn, dried peas, beans, and rice might be used as a change. All the vegetable foods require much care in cooking; and I do not think that a child's time is wasted in learning the elements of cooking whilst at school; the lessons should be especially practical, and directed towards the requirements of the children as future wives and mothers. I am glad to know that arrangements have been made for teaching cooking practically to the elder girls in these schools. I am sure from the sensible way in which they are conducted that they will confer great benefit upon the pupils, and I hope this good object, so well begun, will receive such support that it may be carried on permanently.

The fourth class of **Accidental** diseases require only referring to to show how they are to a large extent under our control; railway accidents, street accidents, accidents on the ice, or in rowing, machinery accidents, are all to a large extent preventible, and it behoves us to keep vigilant watch to diminish these.

I will now say a few words on the subject of infant mortality, because I consider it a very important matter. Out of 1000 children

* *Vide* Dr. Stark's paper in the "Journal of the Statistical Society." Vol. xxix.

who are born in England, 170 die in the course of the first year of life. The mortality varies very much in different countries; in Sweden it is 153 per 1000, in Bavaria as much as 372 died out of 1000 in the first year of life; it varies also very much in different parts of England, in London being 162 per 1000, in Leicester 245 per 1000. Now when you see so much variation it behoves us to look for the reason, and it is generally not difficult to find. To begin:—where you have general bad sanitary arrangements, there you will be sure to have a high infant mortality, for the tender frames of infants are especially susceptible to bad air and other unwholesome conditions. There are also special causes which lead to a high mortality among infants; in the iron and coal mining districts where there are an excess of marriages of women under age, many of the deaths are probably due to mismanagement through ignorance; in other parts where the women are employed in the manufacture of textile fabrics, one of the causes of infant mortality is doubtless neglect of the mothers. In London none of these causes particularly predominate, and we have a comparatively low rate, but at the same time a great deal of the infant mortality in London is preventible; it is due to the bad sanitary conditions of the cottages, to improper feeding, and to the mothers going out to work; there are some “Plain Rules for the Management of Infants,” by the late Dr. Lankester, sold in sheets at the rate of 6d. per dozen. If those people, clergy, district visitors, and others who visit among the poor, were to distribute these, they would be doing a very great good. Also, every effort should be made to persuade mothers not to go out to work when they have children at home at least as young as one year old; it is their duty at all hazards to attend to them, and nobody can do it as well; day nurseries are of some use, but great efforts should be made to prevent mothers going out to work. Ladies should steadfastly refuse to employ women who have children at home whom they ought to be looking after; better by half help them so that they may stay at home, rather than give them any encouragement to neglect their children. No medical man who practises among the poor can be long without knowing of many infants who have died from neglect through this cause.

I have now gone through the principal causes of death, and have endeavoured, I trust successfully, to point out to you how they are to a large extent under our control; I have shown here and there the good which has already been done, and in what way further efforts are necessary. There are more people living to old age now than

formerly, and I fully believe that by attendance to general sanitary matters, as well as to individual hygiene, that proportion may be much further increased. I will now enter, with your permission, a little more fully into the rules of health which concern individuals—though, of course, what concerns the individual concerns the community, and what is of benefit to the community has a good effect also on the individual.

First, as regards the *dwelling*. In one way happy are the people who live in their own houses, and have money to command all the most improved appliances of sanitary science; but the large proportion of the inhabitants of London are only able to occupy a part of a house, and yet we find all the houses built just as if they were to be occupied by one family. There is often a family in every room, from basement to attic, and in this single room the family have to do their best in eating, cooking, working, and sleeping; there are whole streets, I might say whole districts, of London occupied by lodging houses of different sizes, and yet we find no difference in the internal arrangement of them. The houses in London should be built like the houses in Paris, in flats; we are getting model lodging houses for the poor, which I believe get occupied as soon as they are built, and we have a few buildings in flats for the wealthy classes, but we still have no buildings of which the ordinary middle-class family can occupy a part with comfort and privacy. Whole new streets of houses keep being built in the same old fashion, which, if not at first, will very speedily get developed into lodging houses.

Before taking a house, a man should inquire into the drainage; the main drainage of London is good, though, as I have said before, I do not approve of its going into the Thames; but the house drains are far from good; old disused cesspools are constantly being found in old houses. Look, for instance, at Marlborough House, the basement of which important establishment is only now undergoing thorough investigation; and this is not an isolated case. There are still a large number of brick drains running under houses, and, what is worse than anything, few house drains have any means of ventilation, so that all reflux of sewer gas must enter the houses through the different traps, instead of through a proper ventilator. A great deal of good might be done by a law compelling a house to be examined as regards its drains before the renewal of every lease. I have not time to enter into the causes of dampness in a house, many of which are preventible; but attention should be directed to this subject before an individual takes his house.

To breathe *fresh air* is of the greatest importance. Legislation could do a great deal to rid London of its smoke ; but, short of that, there are a few plain rules which should govern the occupier of a house or room. Windows should open at the top and bottom, and to the external air, not on to a passage ; it is astonishing in how few of the rooms of the poor do the upper sashes open. I think this a very important matter ; the greatest care should always be taken to let in air freely at every opportunity ; two or three times a day the windows should be opened wide, the occupants either going out or wrapping themselves up ; a few minutes with the windows wide open will do a great deal of good ; this should be done on rising in the morning, before going to bed at night, and once at least during the day. When a small room is constantly occupied by a great many people, the windows should be nearly always open, and this may be simply accomplished, without draughts, by placing a piece of wood, the whole length of the sash, under and supporting the lower sash ; air will then enter between the sashes at the middle of the window, and be directed upwards. A better plan is to make a slanting opening in the wall close to the ceiling to the open air, as far as possible from the fireplace ; this opening being directed upwards will conduct the air to the ceiling, where it will be diffused, and descend gradually. A room should be kept as free from lumber as possible, and the poor are well off in not having gas in their rooms.

The next essential for health is *good water*, and plenty of it ; people must see that it is not through their own fault that the water gets contaminated through dirty cisterns ; cisterns must be covered, and the overflow pipe should never lead direct into a sewer, otherwise it becomes a ventilator. If the water is of doubtful purity, it should always be filtered through a charcoal filter ; these can be bought very cheaply, or, with a little industry, one can be made for a few pence, which will answer all the purpose. If the water is not filtered it should be boiled, and allowed to cool before it is used for drinking. As the result of an analysis of the water supplied to the metropolis and some of its suburbs during last December, Dr. Frankland reports that the water delivered by the five companies drawing their supply from the Thames was much polluted by organic matter, some of which was of most objectionable origin. Although the water furnished by four of these five companies had been efficiently filtered, it was in each case quite unfit for dietetic purposes ; one of these (the Grand Junction water) contained moving organisms, so that people drinking this water would be swallowing live animals, a proceeding which ought to frighten

them as much as vivisection. One of the hindrances to temperance is doubtless the difficulty of getting pure, wholesome and pleasant water to drink. There is a Bill to come before Parliament this session, but, to my mind, there is the fatal objection to it that there are to be two supplies, one of pure water and one of impure. The endless source of difficulties there must be in this seems to me only to require mentioning to be accepted at once.

As regards *food* a great deal might be said, but I will only trouble you with a few words. People should endeavour to like everything; children should never be allowed to grow up dainty; parents should see that they have good wholesome food, suitable to their age, and see that they eat it; nothing is worse than to let a child grow up not liking this or that. Often you see a person who does not like potatoes, another who cannot touch greens, a third who has a great distaste for beef; all these fancies are due to faulty bringing up. A great deal of indigestion is due to a capricious appetite being encouraged. Meals should be taken regularly; for adults three meals a day are sufficient, children require theirs oftener; old people too require food in small quantities, and often repeated. Many adults do well on two meals a day, but I think most people are better with three. The first meal in the day should be taken, as in this country, before the work of the day is commenced; a second meal should be in the middle of the day, and the third two or three hours before retiring to rest. I think, as a people, we take too much meat; with a large proportion of people it is nothing but meat. I do not advocate a purely vegetable diet; I believe, as a nation, we should not be nearly so strong on vegetables only; still we take more meat than we require. We do not make the best use of what we have. In one of the experiments on diet of the late Dr. Parkes, he kept a strong soldier, 30 years of age, and weighing $10\frac{1}{2}$ stone, and doing hard work, on oatmeal and milk alone; and found that he was kept in perfect health, and at a constant weight, by $1\frac{3}{4}$ lbs. of oatmeal, and 2 pints of milk; the cost was 5d. for the oatmeal, and 4d. for the milk, viz., 9d. a day, or 5s. 3d. per week. The man himself was very sorry to return to his soldier's rations of bread, butter, meat and potatoes, &c.

As a rule, a man attains his natural weight by the age of 23, many get a little heavier up to 30; from 30 to 60 years of age a man should change very little in weight. If he is becoming heavier, he is either eating too much or eating food improper for him, or drinking too much, especially alcohol, or he is leading too sedentary a life; if he is becoming lighter, there is probably some disease, unless he is unable

to get sufficient food, or has too much exercise ; mental worry, too, will keep a man thin.

Drinks.—The position which *alcohol* should occupy in the dietary of healthy people is one of the burning questions of the day, and one which cannot be settled off hand, nor can it be settled by any ready means ; it can only, I think, be really grappled with by increased education, by giving people a mind to enjoy healthy recreation, by giving them the means of attending free libraries, free reading rooms, free museums, which must be open at times when they can attend them. It is impossible that a working man with a family, and with only one room, can spend all his evenings at home, and if he could, it is doubtful whether there is really space for a big man in the room longer than necessary, hence we must encourage clubs, places where men can go and talk as well as read ; there should be more places in London like the Continental cafés, where the lower classes can sit down and read the papers, and not, as so often is the case now, have to stand at a bar drinking all the evening. People who have the influence and the money must look upon the poor as their brothers, must take interest in their ways and doings, not in a patronizing way, for people hate being patronized, but must endeavour to put themselves in their position ; means must be given them to help themselves, and I believe that a gradual change for the better will take place.

A large amount of interest is being taken in this subject, and already much good has been done. I think great honour is due to the many great and good people who are doing their best in this field ; we have already many temperance places, and coffee palaces keep cropping up and are thoroughly successful ; still I must say I do not like the plan of meeting the difficulty by encouraging people to give up taking alcohol altogether ; this plan is good, and is the only proper plan for those who are habitually taking it in excess, ruining their health and their prospects, bringing misery in a thousand ways upon their families ; but I do not think it right to strongly press people who only take it moderately to give up alcohol altogether ; I also strongly object to making people take the pledge in the way it is often done ; people who cannot keep from alcohol without taking what is called the pledge will not keep from it after they have. I dislike giving people facilities for breaking their word, and making people take the pledge without long consideration is very often doing this. I think we should be decidedly wrong to abolish alcohol in health altogether

because we do not know how to use it ; it is our duty to use it, and not to abuse it. As a nation I do not think we should be as strong or hardy without it ; whether we owe our hardihood to alcohol, or whether our tolerance of alcohol shows our hardihood, I am not able to say, but those nations who can take strong drinks are the hardier nations. Among moderate drinkers there is no doubt that there are some who are better without any, there are others whom a moderate amount does not affect, but there are others, and they in my opinion form the large proportion of the adult population, who are decidedly better with a moderate amount of alcoholic stimulant.

If people take alcohol, there are a few rules they should observe. It should be only taken with meals, and if for any reason it be taken at other times, some solid food should always be taken at the same time ; raw spirits should be avoided altogether. The best drinks are weak beer and light wines ; for most people I think beer is better, especially for those who are thirsty.

The remarks I have just made apply only to adults ; children, if healthy, are better without taking alcohol as a habit ; besides, too, by bringing them up without depending on alcohol we are helping to save their pockets when they grow up, and perhaps saving them from vicious habits.

So far I have only been speaking of the use of alcohol in health ; I think in disease it is as wrong to withhold alcohol from the sick as it would be to withhold opium ; one is not of more use than the other, both have their uses, and because certain persons abuse alcohol—though they may be a large number—it does not seem fair that others who do not abuse it should have it withheld from them when they require it. You may have noticed that I have not gone through the whole catalogue of ills which are brought on by alcohol, the crimes, the poverty, the misery, the many diseases, and deaths ; they are doubtless all too well known to you.

Now, alcohol is not the only drink by which it is possible to quench thirst, and supply the necessary quantity of fluid to the system. For children undoubtedly the best drink at all times is milk, or milk and water, and every charity which supplies the poor with food, should also supply milk for the children ; tea, coffee, and cocoa, are all good. The present outcry against tea is, I think, very fanciful ; it is a very useful beverage, and though perhaps a few people get indigestion from taking too much, there are not many, and I do not know any disease which tea drinking produces, which is not immediately cured by its withdrawal.

Effervescing drinks—soda and seltzer water—are, I think, better not taken habitually. As regards other drinks, I do not think I can do better than quote the late Dr. Parkes. He says: "If a little rice is washed in cold water, and then is boiled in a good deal of water, the fluid, if a little sugar is added, is a pleasant and nutritious drink. It is much used in India by our men. In winter it may be taken warm, in summer cold; and in summer, if you buy an ounce of powdered tartaric or citric acid, which is very cheap, and put a small quantity in this rice water, a very refreshing acid beverage is obtained. . . . If you live in the country, and can get skimmed milk, nothing can be better for you and your family than to drink this at dinner and supper. It is as well always to boil it, and a little sugar makes it still more agreeable; no acid must be added to this. . . . When you have any heavy work to do, do not take either beer, cider, or spirits; by far the best drink is thin oatmeal and water with a little sugar. The proportions are: a quarter of a pound of oatmeal to two or three quarts of water, according to the heat of the day, and your work and thirst; it should be well boiled, and then an ounce or an ounce-and-a-half of brown sugar added. . . . It is quite a mistake to suppose spirits give strength. They give a spurt to a man, but that soon goes off, and if more than a certain quantity is taken, they lessen the power of work. For quenching thirst, few things are better than weak coffee and a little sugar—one ounce of coffee and half-an-ounce of sugar, boiled in two quarts of water, and cooled, is a very thirst quenching drink; cold tea has the same effect, but neither are so supporting as oatmeal; thin cocoa also is very refreshing, and supporting likewise, but is more expensive than oatmeal."

I am afraid I have already detained you too long, but the magnitude of my subject must be my excuse; I have not treated it at all fully in any particular, but rather striven to give a general indication as to how many diseases may be prevented by individual or combined exertion. It behoves us to be always vigilant, for, with an increasing population, and with existing sanitary appliances not improving by use, we shall be sure to have increase of disease were we not constantly watchful of everything which concerns the health of the community. All of you can help on sanitary progress in one way or another. To those who hold a seat on a Sanitary Board, as a Vestry, or Board of Guardians, a knowledge of sanitary science is essential. The clergy also, and their numerous assistants, who do so much good in visiting among the poor, cannot do better than lay to heart some of the main truths of public health requirements. I should recommend

every one to study a little shilling book on "Personal Care of Health," by the late Dr. Parkes, published by the Society for the Promotion of Christian Knowledge; there are also sheets of instruction by Dr. Lankester on the management of infants, and other matters in relation to the preservation of health, which should be well digested by those who have to do with mothers' meetings, and in other ways come in contact with the poor. A great deal can be done in this way, without any expense whatever, but large matters, such as drainage and water supply, can only be managed efficiently by liberal expense; and everyone by giving his support to those who are willing to incur the expense, will be by that means helping on the good cause. It is simply a question whether you prefer to pay to prevent disease, or whether you will run the risk of disease which will probably cause you a much greater expenditure of money, and, perhaps, much anxiety and distress.

Let me say one word more, and I shall have finished. When you have anything the matter, attend to it at once, for a stitch in time saves nine as truly in disease as in mending a hole in a glove, and I say this especially to the poorer people, because to them illness is generally a more serious matter, and because to them it is more easy, at only a small expenditure, or for nothing, to get medical advice from a hospital or dispensary.



